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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/759,924

01/16/2004

Russell H. Barton

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EXAMINER

STIMPert, PHILIP EARL

ART UNIT

PAPER NUMBER

3709

MAIL DATE

DELIVERY MODE

05/04/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/759,924

Applicant(s)

BARTON, RUSSELL H.

Examiner

Philip E. Stimpert

Art Unit

3709

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 January 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12 March 2004</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 6-14, 17-21 recite limitations such as "liquid," "the liquid," or "liquid in the liquid ring." There is insufficient antecedent basis for these limitations in the claims. The examiner suggests amending these claims (or claim 1) to include "a liquid ring disposed adjacent to the inner periphery of said housing" and thereafter modifying "the liquid" to "liquid from said liquid ring," or some similar modification, such as is present in claim 17 (on the 4<sup>th</sup> and final lines of the claim). For the purposes of this office action, all references to "liquid" in the claims are construed to refer to the liquid in the liquid ring of the pump.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-5, 15-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Nash (US 953,222).
5. Regarding claim 1, Nash teaches a liquid ring pump (see Fig. 1) having a housing (5), a rotor (7) mounted eccentrically within the housing. The rotor of Nash's pump comprises an annular inner surface having a plurality of radial apertures (16-20),

Art Unit: 3709

a plurality of spaced blades (27) interspersed between the plurality of radial apertures (16-20), the blades projecting radially outward from the annular inner surface, and a pair of sidewalls (26) spaced apart axially along the annular inner surface with one side wall on each axial side of the radial apertures, the side walls projecting outwardly from the annular inner surface and extending between the spaced blades (27) to form a plurality of radially extending chambers (9-13) wherein gas enters and leaves the chambers through the radial apertures during operation.

6. Regarding claim 2, Nash teaches port means (15, 16) for supplying gas to and receiving gas from the chambers (9-13) through the apertures (16-20) of the annular rotor.

7. Regarding claim 3, Nash teaches an intake port (15) positioned radially inward of the annular rotor (7) for directing gas to the compression chambers (9-13) and a discharge port (16) positioned radially inward of the annular rotor (7) surface for receiving gas discharged from the compression chambers (9-13), the discharge port (16) being angularly spaced from the intake port (15).

8. Regarding claim 4, Nash teaches that one blade (27) is positioned between each adjacent pairs of radial apertures (16-20).

9. Regarding claim 5, Nash teaches that one side wall is positioned on each side of the radial apertures.

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nash, in view of Pyrhönen (US 6,347,926). Nash substantially teaches the invention of claim 1, but does not teach that the housing comprises a rotatable ring having means to cause the liquid in the liquid ring pump to rotate when the rotatable ring is rotated, nor does he teach an actuator being magnetically couplable to the housing to controllably rotate the liquid. Pyrhönen teaches a rotatable ring (11), configured to rotate about an axis parallel to an axis of the rotor (2), as well as an actuator (14) being magnetically couplable to the rotatable ring to controllably rotate the liquid. Pyrhönen's rotatable ring is primarily intended to reduce friction between the ring and the liquid in the liquid ring. However, Pyrhönen expressly discloses that "it is also possible to arrange a desired difference in the speeds [of the ring and the rotor]," (col. 4, ln. 25-27), and that the "rotor means 2 may also be set to a nonrotational stage or to rotate freely" (col. 4, ln 28-29). If the rotor (2) of Pyrhönen were allowed to rotate freely, then the energy necessary to drive liquid in the liquid ring could be imparted through frictional contact with the rotatable ring. The applicant discloses in the specification that means to cause the fluid to rotate may include "a high coefficient of friction with the liquid so that rotation of the liquid will be induced" (pg. 12, ln. 5-6 of the instant application). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to modify Nash's pump such that the housing comprised a rotatable ring, in order to reduce the power required to overcome friction in the pump. This modification of Nash's pump

Art Unit: 3709

would also have inherent means to cause the liquid in the liquid ring pump to rotate when the liquid ring was rotated.

12. Claims 9-14, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nash, in view of Pyrhönen, Bearnson et al (US 6,394,769), and Haavik (US 4,050,851). Nash substantially teaches the invention of claims 1 and 17, but does not teach that the housing comprises a rotatable ring having means to cause the liquid in the liquid ring pump to rotate with the rotatable ring, nor does he teach an actuator being magnetically couplable to the housing to controllably rotate the liquid. Pyrhönen teaches a rotatable ring (11), configured to rotate about an axis parallel to an axis of the rotor (2), as well as an actuator (14) being magnetically couplable to the rotatable ring to controllably rotate the liquid. Pyrhönen does not teach that the rotatable ring (11) has a plurality of inwardly extending elements adapted to cause the liquid in the liquid ring pump to rotate when the rotatable ring is rotated. Bearnson et al teach a rotatable ring having a plurality of inwardly extending elements (64, see Fig. 6). Haavik teaches that a liquid ring pump which "does away with the conventional motor and the coupling between the shaft of the motor and the rotor" (col. 1, ln. 61-66) is advantageous, in that it is simpler and more compact (col. 1-2, ln. 66-2). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to modify Nash's pump such that the housing comprised a rotatable ring, and to provide that ring with a plurality of inwardly extending elements adapted to cause the liquid in the liquid ring pump to rotate when the rotatable ring was rotated, and to further provide an actuator being magnetically couplable to the rotatable ring to controllably rotate the liquid, in order to

Art Unit: 3709

create a pump which advantageously eliminated the need for a motor driving the rotor of the pump.

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Philip E. Stimpert whose telephone number is (571) 270-1890. The examiner can normally be reached on Mon-Fri 8:00AM-5:00PM, Alt. Fridays, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Jackson can be reached on (571) 272-4697. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PES

PES (10 Apr 07)

GARY JACKSON  
SUPERVISORY PATENT EXAMINER

Gary Jackson 4/27/2007